Basic Configuration Commands

Table of Contents

Chapter 1 System Management Commands

1.1 Commands for Managing Configuration Files

Commands for managing configuration files are shown in the following:

- copy
- delete
- dir
- ip address
- ip route
- write
- show configuration
- format
- more

1.1.1 copy

Syntax

To read files from the TFTP server to the switch, run copy.
copy tftp[*:filename*] {**flash**[*:filename*] | **rom**[*:filename*]} [*ip_addr*]

Parameters

Parameters	Description
tftp[:filenam]	Reads files from the TFTP server. The filename parameter shows the corresponding file name. If the filename parameter is not designated, you are prompted to enter the file name after the copy command is run.
flash[:filename]	Writes files into the flash of the OLT. The filename parameter shows the corresponding file name. If the filename parameter is not designated, you are prompted to enter the file name after the copy command is run.
rom[:filename]	Updates the bootrom of the OLT.
ip_addr	Means the IP address of the TFTP server. If this parameter is not designated, you are prompted to enter the IP address after the copy command is run.

Default Value

None

Command Mode

Monitoring Mode, Privileged mode

Usage Guidelines

None

Example

The following example shows how to copy the switch.bin files from the TFTP server to the flash of the OLT.

monitor#copy tftp:switch.bin flash:switch.bin 192.2.2.1

Related Command

None

1.1.2 delete

Syntax

To delete a file, run delete.

delete *file-name*

Parameters

Parameters	Description
file-name	Means a file name with up to 20 characters.

Default Value

If the file name is not entered, the startup-config files will be deleted by default.

Command Mode

Monitoring Mode, privileged mode

Usage Guidelines

None

Related Command

None

1.1.3 dir

Syntax

To display a file and a directory, run dir.
dir *file-name*

Parameters

Parameters	Description
file-name	Means a file name with up to 20 characters.

Default Value

None

Command Mode

Monitoring Mode, privileged mode

Usage Guidelines

None

Related Command

None

Example

monitor# dir

Listing Directory /:

maple.blob	<FILE>	6328554	Jan 01 00:01:34 1970
startup-config	<FILE>	4714	Jan 01 00:04:24 1970
config.db	<FILE>	10240	Jan 01 00:04:30 1970
switch.bin	<FILE>	9336989	Jan 01 00:03:16 1970

free space is 17260544 bytes

1.1.4 ip address

Syntax

To designate the IP address of the Ethernet port, run ip address in the monitoring mode.
ip address *ip-address mask*

Parameters

Parameters	Description
ip-address	IP address
mask	Mask of the IP network

Default Value

None

Command Mode

Monitoring Mode, vlan port configuration mode

Usage Guidelines

None

Example

monitor#ip address 192.168.1.1 255.255.255.0

Related Command

ip route
ping

1.1.5 ip route

Syntax

To designate a default gateway, run ip route in the monitoring mode.
ip route default gw_ip_addr

Parameters

Parameters	Description
gw_ip_addr	Stands for a default gateway address.

Default Value

None

Command Mode

Monitoring Mode, global configuration mode

Usage Guidelines

None

Example

monitor#ip route default 192.168.1.3

Related Command

ip address

1.1.6 write

Syntax

To save the current configuration file, run the following command.
write [all | database | ifindex | vos-config]

Parameters

Parameters	Description
all	Save all the configuration files
database	Save the database configuration
ifindex	Save the current ifindex
vos-config	Save the pre configuration

Default Value

If no parameter is entered, save the configuration file startup-config and database by default.

Command Mode

Privileged mode or global configuration mode

Usage Guidelines

None

Example

None

Related Command

show configuration

1.1.7 show configuration

Syntax

To display the current configuration file of the system, run show configuration.
show configuration

Parameters

None

Default Value

None

Command Mode

Other modes except the non-user mode

Usage Guidelines

None

Example

None

Related Command

None

1.1.8 format

Syntax

To format the file system, run format in EXEC mode.
format

Parameters

None

Default Value

None

Command Mode

Monitoring mode, privileged mode

Usage Guidelines

If the format command is used, all files in the file system will be lost.

Example

None

Related Command

None

1.1.9 more

Syntax

To display the content of a file, run more in EXEC mode.
more *file-name*

Parameters

Parameters	Description
file-name	Means a file name with up to 20 characters.

Default Value

None

Command Mode

Privileged mode, monitoring mode

Usage Guidelines

If all characters in the file are legible, they are displayed in the ASCII code; otherwise, it will be displayed in the binary system.

Example

None

Related Command

None

1.2 Basic System Management Commands

Basic System Management Commands

- bootflash

- cd
- chinese
- chram
- date
- english
- md
- pwd
- rd
- rename
- reboot
- alias
- boot system flash
- help
- history
- show
- show alias
- show break
- show memory

1.2.1 boot flash

Syntax

To start a device from the designated file in the monitoring mode, run the following command.

boot flash *filename*

Parameters

Parameters	Description
filename	Stands for the name of the designated file.

Default Value

None

Command Mode

Monitoring Mode

Usage Guidelines

After a user enters the monitor state, you can use this command to start a device.

Example

monitor#boot flash switch.bin

Related Command

None

1.2.2 cd

Syntax

To change the current directory, run the following command in the monitoring mode.
cd *directory*|..

Parameters

Parameters	Description
directory	Means a file name with up to 20 characters.
..	Parent directory

Default Value

None

Command Mode

Monitoring Mode, privileged mode

Usage Guidelines

None

Example

monitor#cd my_dir

Related Command

pwd

1.2.3 chinese

Syntax

To switch the command prompt to Chinese mode, use the chinese command.
chinese

Parameters

None

Default Value

None

Command Mode

Any Mode

Usage Guidelines

None

Example

None

Related Command

None

1.2.4 date

Syntax

To set system absolute time, run command "date".
date

Parameters

None

Default Value

None

Command Mode

Monitoring Mode, privileged mode or global configuration mode

Usage Guidelines

The command can be used to set the absolute time for the system. For the OLT with a battery-powered clock, the clock will be powered by the battery. If the clock doesn't keep good time, you need to change the battery.
For the OLT without a battery-powered clock, the system date is configured to Jan 1st,1970 after the reboot of the OLT, and user needs to set the current time each time when starting the OLT.

Example

```
monitor# date
The current date is 1970-1-1 4:6:50
Enter the new date(yyyy-mm-dd):2016-03-03
Enter the new time(hh:mm:ss):18:04:30
```

Related Command

None

1.2.5 english

Syntax

To switch the command prompt to english mode, use the english command.
english

Parameters

None

Default Value

None

Command Mode

Any Mode

Usage Guidelines

None

Example

None

Related Command

None

1.2.6 md

Syntax

To set up a directory, run the following command.
md *directory*

Parameters

Parameters	Description
directory	Means a file name with up to 20 characters.

Default Value

None

Command Mode

Monitoring Mode, privileged mode

Usage Guidelines

The command can be used to set a directory.

Related Command

None

1.2.7 pwd

Syntax

To show the current directory, run the following command.
pwd

Parameters

None

Default Value

None

Command Mode

Monitoring Mode, privileged mode

Usage Guidelines

The command can be used to display the current directory.

Related Command

None

1.2.8 rd

Syntax

To delete a directory, run the following command.

rd *directory*

Parameters

Parameters	Description
directory	Means a file name with up to 20 characters.

Default Value

None

Command Mode

Monitoring Mode, privileged mode

Usage Guidelines

The system prompts if the directory is not empty. The system prompts if the directory doesn't exist. To delete a command, use the rd command.

Related Command

None

1.2.9 rename

Syntax

To rename a file in a file system, use the rename command.

rename *old_file_name new_file_name*

Parameters

Parameters	Description
old_file_name	The original filename.
new_file_name	The new filename.

Default Value

None

Command Mode

Monitoring Mode, privileged mode

Usage Guidelines

None

Related Command

None

1.2.10 reboot

Syntax

To reboot the OLT, run the following command.
reboot [noconfirm]

Parameters

None

Default Value

None

Command Mode

Monitoring Mode, privileged mode

Usage Guidelines

The command can be used to reboot the OLT.

Related Command

None

1.2.11 alias

Syntax

To name the alias, run the following command.
alias [alias_name] [command_line]

Parameters

Parameters	Description
alias_name	Name the alias name.

command_line	The command of naming the alias name.

Default Value

None

Command Mode

Global Configuration mode

Usage Guidelines

The command can be used to replace "command_line" with "alias_name". For instance, alias update1 copy tftp: switch.bin flash:switch.bin 10.168.30.188. The command " copy tftp: switch.bin flash:switch.bin 10.168.30.188 " will automatically run on the OLT only update 1 is input.

Example

Replace command " copy tftp: switch.bin flash:switch.bin 10.168.30.188" with "update1".

Switch_config# alias update1 copy tftp: switch.bin flash:switch.bin 10.168.30.188

Related Command

None

1.2.12 boot system flash

Syntax

To designate the systematic mirror file that will be executed when the system is started, run the following first command; to cancel this settings, run the following second command.
boot system flash *filename*
no boot system flash [filename]

Parameters

Parameters	Description
filename	Means a file name with up to 20 characters.

Default Value

None

Command Mode

Global configuration mode

Usage Guidelines

If the user doesn't configure the command, the system will execute the first system mirror file of the flash file system. If the user configures with multiple commands, the system executes the mirror documents in turn. If the document doesn't exist or occurs mirror. The next file will be executed consecutively. If the file doesn't run successfully, the system enters the monitor mode.

Example

The following example shows when starting the system how to set the system mirroring file to Switch_config#boot system flash switch.bin

Related Command

None

1.2.13 help

Syntax

help

Parameters

None

Default Value

None

Command Mode

Any mode

Usage Guidelines

The command can be used to show the help system of the OLT.

Example

The following example shows how to show the help system of the OLT.

switch# help
Help may be requested at any point in a command by entering a question mark '?',If nothing matches, the help list will be empty and you must backup until entering a '?' shows the available options.
Two styles of help are provided:
1. Full help is available when you are ready to enter a command argument(e.g.'show ?') and describes each possible argument.
2. Partial help is provided when an abbreviated argument is entered and you want to know what arguments match the input (e.g. 'interface e?'.)

Related Command

None

1.2.14 history

Syntax

To show history command, run the following command. To return to the default setting, use the no form of this command.
[no] history [+ <*count*> | - <*count*> | clear]

Parameters

Parameters	Description
+ <count>	To display the count<1-20> historical command from the beginning to the end.
- <count>	To display the count<1-20> historical command from the end to the beginning.

Default Value

If there are no more than 20 commands executed, all historical command lines will be displayed from the beginning to the end. If there are more than 20 commands executed, all historical command lines will be displayed from the beginning to the end.

Command Mode

Any command mode except the monitoring mode

Usage Guidelines

The OLT can save up to 20 historical commands. You can invoke these commands with the "up" or “down” key or directly use it after edition. The command can be used to browse the history command. You can run the [no] history command to delete the history command.

Example

The following example shows how to display the latest 5 history commands from the end to the beginning.

```
switch#history - 5
config
int gp01/1
no ip addr
ip addr 192.2.2.49 255.255.255.0
exit
```

Related Command

None

1.2.15 show

Syntax

To display the relevant information of the system, which or specific ones of which can be filtered through the filter, run the following command:
show <sub-command> [| {begin | include | exclude | redirect} <WORD> [SEPARATOR WORD]]

Parameters

Parameters	Description
sub-command	Stands for a child command.
|	Uses the output filter.
begin	Means to show the result of the show command starting with a specific word.
include	Means to show the lines of the result of the show command containing a specific word.
exclude	Means not to show the lines of the result of the show command containing a specific word.
redirect	Redirects the result of the show command to the file in the designated file system.
WORD	Stands for a designated word, which is the designated filename as to the redirect command.
SEPARATOR WORD	Stands for the designated separator, which is space by default to separate the words.

Default Value

None

Command Mode

Other modes except the user mode

Usage Guidelines

This command can be used to filter the useless information in the result of the show command, especially when the result is too much to read. For example, if you want to browse a

designated MAC address in an MAC address table, which contains a lot of MAC addresses, this command will give you convenience for you.

Example

The following example shows how to display the lines, in which the word “interface” is contained, in the result of show running-config.

```
Switch#show running-config | include interface
Building configuration...


Current configuration:
!
mirror session 1 source interface gpon0/2 tx
  permit igmp 1.1.1.1 255.255.255.0 interface GigaEthernet0/1
interface Port-aggregator1
interface Null0
interface GigaEthernet0/0
interface GigaEthernet0/1
interface GigaEthernet0/2
interface GigaEthernet0/3
interface GigaEthernet0/4
interface GigaEthernet0/5
interface GigaEthernet0/6
interface GigaEthernet0/7
interface GigaEthernet0/8
interface TGigaEthernet0/1
interface TGigaEthernet0/3
interface TGigaEthernet0/4
interface GPON0/1
interface GPON0/1:1
interface GPON0/1:2
interface GPON0/2
interface GPON0/2:1
interface GPON0/2:2
interface GPON0/3
interface GPON0/4
interface GPON0/4:1
interface GPON0/5
interface GPON0/6
interface GPON0/7
interface GPON0/8
interface GPON0/9
interface GPON0/10
interface GPON0/11
interface GPON0/12
interface GPON0/13
interface GPON0/14
interface GPON0/15
interface GPON0/16
interface VLAN1
interface SuperVLAN5
```

Related Command

1.2.16 show alias

Syntax

To display all aliases or the designated alias, run the following command.
show alias [<*alias name*>]

Parameters

Parameters	Description
alias name	Name the alias name.

Default Value

Display all aliases according the format “alias name=command line”.

Command Mode

Other modes except the non-user mode

Usage Guidelines

None

Example

The following example shows how to display all aliases of the current system:

```
switch_config#show alias
hualab=date
router=snmp
```

Related Command

alias

1.2.17 show break

Syntax

To display the abnormal information of the system, run the following command. The system stores all abnormal information in the latest running. The abnormal information contains the times of abnormity, the stack content and the invoked functions when abnormity occurs.
show break

Parameters

None

Default Value

None

Command Mode

Monitoring Mode, global configuration mode

Usage Guidelines

The command is only used for debugging.

Example

The following example shows how to display the system abnormal information:
switch_config#show break
System OK,No break info

Related Command

None

1.2.18 show memory

Syntax

To show the system memory, run the following command.
show memory type mem_addr

Parameters

Parameters	Description
mem_addr	The hex system memory address, the value ranges from 0 to 0x01FFFF00 (It is determined by the OLT memory).
type	Memory type

Default

None

Command Mode

Privileged mode

Usage Guidelines

None

Related Command

None

Chapter 2 Terminal Service Configuration Commands

2.1 Telnet Configuration Commands

The chapter describes telnet and relative commands. The telnet command is used to establish a session with the remote server. The telnet command is always working at the UNIX operating systems. Option negotiation is required. Telnet does not provide itself the login authentication. Telnet is different from Rlogin because telnet does not provide itself password check.
The telnet configuration commands include:

- telnet
- ip telnet
- where
- connect
- disconnect
- resume
- clear Telnet
- show Telnet
- debug Telnet

2.2 telnet

Syntax

To establish a telnet session, run the following command:
telnet server-ip-addr/server-host-name [/port port | [/source-interface interface | /local local-ip-addr] | /debug | [/echo | /noecho] | /script scriptname]

Parameters

Parameters	Description
server-ip-addr	Dotted-decimal IP address of the remote server
server-host-name	Name of the remote server, which is configured by the ip hostcommand
Port	Telnet port of the remote server
interface	Local interface where the telnet connection is originated
local-ip-addr	Local IP address where the telnet connection is

	originated
/debug	A negotiation process for enabling the debug at the client side and printing the connection
/echo */noecho*	Enable or disable the local echo. The default value is noecho.
scriptname	A script name used for auto login

Default Value

The default port number is 23. The interface has no default number.

Command Mode

User mode, privileged mode, global configuration mode

Usage Guidelines

You can use one of the following command lines to establish a remote login.

telnet server-ip-addr/server-host-name

In this case, the application program directly sends the telnet login request to port 23 of the remote server. The local IP address is the IP address which is nearest to the peer and found by the routing table.

telnet server-ip-addr/server-host-name /port port

In this case, the application program sends a telnet login request to the port of the peer.

telnet server-ip-addr/server-host-name /source-interface interface

In this case, the application program uses the IP address on the interface ass the localIP address.

telnet server-ip-addr/server-host-name /debug

In this case, the application program opens the debug and exports the connection at the client side.

telnet server-ip-addr/server-host-name echo/noecho

In this case, the application program enables or disables the local echo. The local echo is disabled by default. Only when the server is not in charge of echo is the local echo enabled.

telnet server-ip-addr/server-host-name /script scriptname

Before executing the automatic login command of the script, run the command **ip telnet script** to configure the script.

The previous commands can be used together.

During the session with the remote server, you can press the Q button to exit the session. If the session is not manually quit, the session will be complete after a10-second timeout.

Example

Suppose you want to telnet server 192.168.20.124, the telnet port of the server is port 23 and port 2323, and the local one interface is f1/1(192.168.20.240). You can run the following

operations to complete the remote login.
Switch# telnet 192.168.20.124 /port 2323
In this case, the telnet connection with port 2323 of the peer is to be established. The local IP address of the peer is 192.168.20.240.

Switch# telnet 192.168.20.124 /source-interface f1/1
In this case, the telnet connection with port 23 of the peer is to be established. The local IP address of the peer is 202.96.124.240.

Switch# telnet 192.168.20.124 /local 192.168.20.240
In this case, the telnet connection with port 23 of the peer is to be established. The local IP address of the peer is 192.168.20.240.

Switch# **telnet** *192.168.20.124* **/debug**
In this case, the telnet connection negotiation with port 23 of the peer will be printed out.

Switch# telnet 192.168.20.124 /echo
In this case, the local echo is enabled. If the echo is also enabled at the server side, all input will be echoed twice.

Switch# telnet 192.168.20.124 /script s1
Use login script S1 for automatic login.

2.2.1 ip telnet

Syntax

To establish a telnet session, run the following command.
ip telnet source-interface vlan *value*
ip telnet access-class *accesslist*
ip telnet listen-port *start-port [end-port]*
ip telnet max-user *user-limit*
ip telnet script *scriptname 'user_prompt' user_answer 'pwd_prompt' pwd_answer*

To cancel the configuration of the telnet dialogue, run the following command.
no ip telnet {source-interface | access-class | listen-port *start-port* [*end-port*] | script *scriptname* | max-user}

Parameters

Parameters	Description
value	Local interface where the telnet request is originated

accesslist	Access list name to limit the source address when the local client receives the connection
start-port	Starting port number designated at the listening port area
end-port	End port number designated at the listening port area
scriptname	Name of the login script
user-limit	The maximum user number for simultaneous login. The number ranges from 0 to 63. 0 means no limit.
user_prompt	Username prompt returned by the telnet server
user_answer	Username response information from the client side
pwd_prompt	Password prompt returned by the telnet server
pwd_answer	Password response information submitted by the client side

Default Value

None

Command Mode

Global configuration mode

Usage Guidelines

- Run the following command to configure the local interface for originating the telnet connection:

  ip telnet source-interface *interface*

  In this case, all telnet connections originated afterwards are through the interface. The configuration command is similar to the command telnet source-interface interface. However, the telnet command has no interface parameters followed. When the interface is configured and the telnet command has interface parameters, the interface followed the telnet command is used.

- Run the following command to configure the name of the access list which performs limitation on local telnet connection reception.

  ip telnet access-class *accesslist*

  In this case, the access list will be checked when the server accepts all telnet connections.

- Run the following command to configure a port, except the default port 23, to receive the telnet service.

  ip telnet listen-port *start-port [end-port]*

Note: If the end port number is not designated, the listening will be executed at a specific port. The number of the designated ports cannot be bigger than 16 and the port number ranges between 3001 and 3999.

- Run the following command to configure the telnet login script.

  ip telnet script s1 'login:' switch 'Password:' test

  Note: When the script is configured, the username prompt and password prompt and their answers must be correctly matched, especially the prompt information is capital sensitive and has inverted comma (''). If one of them is wrongly configured, the automatic login cannot be performed.

Note:

You can add the **NO** prefix on the above four commands and then run them to cancel previous configuration.

Example

1. Switch_config# ip telnet source-interface f1/1

In this case, the s1/0 interface will be adopted to originate all telnet connections afterwards.

2. Switch_config# ip telnet access-class abc

In this case, all the received telnet connections use access list abc to perform the access list check.

3. Switch_config# ip telnet listen-port 3001 3010

Except port 23, all ports from port 3001 to port 3010 can receive the telnet connection.

4. Switch_config# ip telnet script s1 'login:' switch 'Password:' test

The login script s1 is configured. The username prompt is login: and the answer isswitch. The password prompt is Password: and the answer is test.

2.2.2 ctrl-shift-6+x (the current connection is mounted)

Syntax

To mount the current telnet connection, run the following command:

ctrl-shift-6+x

Parameters

None

Default Value

None

Command Mode

Any moment in the current telnet session

Usage Guidelines

You can use the shortcut key to mount the current telnet connection at the client side.

Example

```
switchA>telnet 192.168.20.1
Welcome to Multi-Protocol 2000 Series switch
switchB>ena
switchB#(press ctrl-shift-6+x)
switchA>
```

You press **ctrl-shift-6+x** to mount the telnet connection to switch B and return to the current state of switch A.

2.2.3 where

Syntax

To check the currently mounted telnet session, run the following command:
where

Parameters

None

Default Value

None

Command Mode

Global configuration mode, user mode, privileged mode

Usage Guidelines

The command can be used to check the mounted outward telnet connection at the client side. The displayed information contains the serial number, peer address, local address and local port.

Note:

The **where** command is different from the **show telnet** command. The former is used at the client side and the displayed information is the outward telnet connection.

Example

```
switchA>telnet 192.168.20.1
Welcome to Multi-Protocol 2000 Series switch
switchB>ena
switchB#(press ctrl-shift-6+x)
switchA> telnet 192.168.20.2
```

```
Welcome to Multi-Protocol 2000 Series switch
switchC>ena
switchC#(press ctrl-shift-6+x)
switchA>where
NO.          Remote Addr       Remote Port          Local Addr        Local
Port
     1          192.168.20.1                 23           192.168.20.180
20034
     2          192.168.20.2                 23           192.168.20.180
20035
```

Enter **where** at switch A. The mounted outward connection is displayed.

2.2.4 resume

Syntax

To resume the currently mounted outward telnet connection, run the following command:
resume *no*

Parameters

Parameters	Description
no	Number of the currently mounted telnet session that is checked through the where command

Default Value

None

Command Mode

Global configuration mode, user mode, privileged mode

Usage Guidelines

The command can be used to resume the currently mounted outward telnet connection at the client side.

Example

```
switchA>telnet 192.168.20.1
Welcome to  Multi-Protocol 2000 Series switch
switchB>ena
switchB#(press ctrl-shift-6+x)
switchA> telnet 192.168.20.2
Welcome to Multi-Protocol 2000 Series switch
switchC>ena
switchC#(press ctrl-shift-6+x)
```

switchA>where
NO.   Remote Addr   Remote Port   Local Addr   Local Port
    1   192.168.20.1   23   192.168.20.180 20034
    2   192.168.20.2   23   192.168.20.180 20035
switchA>Resume 1
  [Resuming connection 1 to 192.168.20.73 . . .]
(enter)
switchB#

After you enter where at switch A and the mounted outward connection of switch A is displayed, enter Resume1.You will be prompted that connection 1 is resumed. The command prompts of switch B are displayed after the Enter key is pressed.

2.2.5 connect

Syntax

To connect telnet server, run the following command.

connect *server-ip-addr/server-host-name* [/**port** *port* **|** **/script** *script* **|** [/**source-interface** *interface* **|** /**local** *local-ip-addr*]]*

Parameters

Parameters	Description
server-ip-addr/server-host-name	Server IP address or server host name
port	Port number, the value ranges from 0 to 65535
interface	The interface name of triggering the connection
local-ip-addr	The local IP address of triggering connection
script	script name

Command Mode

Global configuration mode, user mode, privileged mode

Example

switch# **connect** *192.168.20.1*

2.2.5 disconnect

Syntax

To clear the currently mounted outward telnet session, run the following command:
disconnect *no*

Parameters

Parameters	Description
no	Number of the currently mounted telnet session that is checked through the where command

Default Value

None

Command Mode

Global configuration mode, user mode, privileged mode

Usage Guidelines

The command can be used to clear the currently mounted outward telnet connection at the client side.

Note:

The **disconnect** command is different from the **clear telnet** command. The former is used at the client side and clears the outward telnet connection.The latter is used at the server and clears the inward telnet connection.

Example

```
switchA>where
NO.       Remote Addr     Remote Port      Local Addr      Local Port
 1      192.168.20.1          23        192.168.20.180        20034
 2      192.168.20.2          23        192.168.20.180        20035
switchA>disconnect 1
<Closing connection to 192.168.20.1> <y/n>y

  Connection closed by remote host.
```

After you enter where at switch A and the mounted outward connection of switch A is displayed, enter disconnect 1. You will be prompted whether the connection of switch B is closed. After you enter Y, the connection is closed.

2.2.6 clear telnet

Syntax

To clear the telnet session at the server, run the following command:
clear telnet *no*

Parameters

Parameters	Description
no	Number of the telnet session that is displayed after the show telnet command is run

Default Value

None

Command Mode

Privileged mode

Usage Guidelines

The command can be used to clear the telnet session at the server.

Example

Switch# clear telnet 1
The telnet session whose sequence number is 1 is cleared at the server (192.168.20.220:1097).

2.2.7 show telnet

Syntax

To display the telnet session at the server, run the following command:

show telnet

Parameters

None

Default Value

None

Command Mode

All command modes except the user mode

Usage Guidelines

The command can be used to display the telnet session at the server. The displayed information includes the sequence number, peer address, peer port, local address and local port.

Example

Switch# show telnet

If you run the previous command, the result is shown as follows:

NO.	Remote Addr	Remote Port	Local Addr	Local Port
1	192.168.20.220	1097	192.168.20.240	23
2	192.168.20.180	14034	192.168.20.240	23

2.2.8 debug telnet

Syntax

The following is a format of the debug command for the telnet session:

To enable the debug information output of telnet, run the following command:

debug telnet

To disable the debug information output of telnet, run the following command:

no debug telnet

Parameters

None

Default Value

None

Command Mode

Privileged mode

Usage Guidelines

The command can be used to enable the switch of the telnet debug.

If the switch of the telnet debug is enabled, the negotiation processes of all the incoming telnet sessions are printed on the window that the debug command invokes. The debug telnet command is different from the telnet debug command. The former is to export the debug information of the telnet session connected to the server. The latter is to export the debug information of the telnet session that the client originates.

Example

The debug information of the telnet session that is connected to the server is displayed:
Switch# debug telnet

2.3 Terminal Configuration Commands

The terminal configuration commands include:

- line
- attach-port
- autocommand
- clear line
- connect
- disconnect
- exec-timeout
- length
- width
- location
- login authentication
- monitor
- no debug all
- password
- show debug
- show line
- terminal length
- terminal monitor
- terminal width
- terminal type

2.3.1 line

Syntax

To enter the line configuration mode, run the following command:
line {console number |vty first-number [last-number]}

Parameters

Parameters	Description
console	Monitoring line, which has only one number 0
vty	Virtual lines such as Telnet, PAD and Rlogin

number	Number in the line of the type
first-number	Line start number, the value ranges from 0 to 31.
last-number	Line end number, the number is larger than the start number. Its maximum value is 31/

Command Mode

Global configuration mode

Usage Guidelines

None

Example

The following example shows how to enter the line configuration mode of VTY 0 to 10.

switch_config#line vty 0 10

2.3.2 attach-port

Syntax

To bind the telnet listening port to the line vty number and enable the telnet connection at a specific port generates vty according to the designated sequence number, run the following command.

attach-port *PORT*

To cancel telnet listening port and line vty number binding, run the following command.

no attach-port

Parameters

Parameters	Description
port	Listening port of the telnet server (3001-3999)

Default Value

None

Command Mode

Virtual line configuration mode

Usage Guidelines

None

Example

Bind listening port 3001 to line vty 2 3:

```
switch_config# line vty 2 3
switch_config_line#attach-port 3001
```

2.3.2 autocommand

Syntax

To set the automatically-run command when user logs in to the terminal, run the following command. The connection is cut off after the command is executed.

autocommand *LINE*

no autocommand

Parameters

Parameters	Description
LINE	Command to be executed

Command Mode

Line configuration mode

Usage Guidelines

None

Example

After you successfully log in, the host whose X.121 address is 123456 will be automatically padded.

```
switch_conf#line vty 1
switch_conf_line#autocommand pad 123456
```

2.3.3 clear line

Syntax

To clear the designated line, run the following command:

clear line {console | vty} number

Parameters

Conform to the line command

Command Mode

Privileged mode

Usage Guidelines

None

Example

switch#clear line vty 0

2.3.6 exec-timeout

Syntax

To set the max idle time of the terminal, run the following command:
exec-timeout *time*
To clear the max idle time of the terminal, run the following command:
no **exec-timeout** time

Parameters

Parameters	Description
time	Idle time in seconds Value range: 0-86400

Default Value

0 (no time-out limit)

Command Mode

Line configuration mode

Usage Guidelines

None

Example

The following example shows how to set the idle time of the line to 1 hour.

switch_conf# line vty 1
switch_config_line#exec-timeout 3600

2.3.7 length

Syntax

To set the line number on the screen of the terminal, run the following command:
length *value*
To return to the default setting, use the no form of this command.
no length

Parameters

Parameters	Description
value	Value range: 0 to 512. The value 0 means there is no pause.

Default Value

24

Command Mode

Line configuration mode

Usage Guidelines

None

Example

To set the line number on the screen of the terminal to 200:
switch_conf# line vty 1
switch_config_line# length 200

2.3.8 width

Syntax

To set the terminal width of the line, run the following command:
width *value*
To set the terminal width of the line to the default value, run the following command:
no width

Parameters

Parameters	Description
value	Value range: 0 to 256. The value 0 means no execution.

Default Value

80

Command Mode

Line configuration mode

Usage Guidelines

None

Example

The following example shows how to set the terminal width of the line to 100:

```
switch_conf# line vty 1
switch_config_line# width 100
```

2.3.9 location

Syntax

To record the description of the current line, run the following command:

location *LINE*

To cancel the description of the current line, run the following command.

no location

Parameters

Parameters	Description
LINE	Description of the current line

Default Value

None

Command Mode

Line configuration mode

Usage Guidelines

None

Example

The following example shows how to set the line description to “switchtest”:

switch_conf# **line vty** 1
switch_config_line# **location** *switchtest*

2.3.10 login authentication

Syntax

To set line login authentication, run the following command:

login authentication {**default** | *WORD*}

To cancel the line login authentication parameter, run the following command.

no login authentication

Parameters

Parameters	Description
default	Default authentication mode
WORD	Name of the authentication list

Default Value

None

Command Mode

Line configuration mode

Usage Guidelines

None

Example

The following example shows how to set the authentication list of the line to test.

switch_conf# line vty 1
switch_config_line# login authentication default

2.3.11 monitor

Syntax

To export the log and debugging information to the line, run the following command:

[**no**] **monitor**

Parameters

None

Command Mode

Line configuration mode

Usage Guidelines

None

Example

To export the log and debugging information to the line, run the following command:

```
switch_conf# line vty 1
switch_config_line#monitor
```

2.3.12 no debug all

Syntax

To shut down all debugging output of the current VTY, run the following command:

no debug all

Parameters

None

Default Value

None

Command Mode

Privileged mode

Usage Guidelines

None

Example

switch#no debug all

2.3.13 password

Syntax

To set the password for the terminal, run the following command:
password {*password* | [encryption-type] *encrypted-password* }
To cancel the password, run the following command.

no password

Parameters

Parameters	Description
password	Password configured on the line, which is entered in the plaintext form and whose maximum length is 30 bits.
[encryption-type] *encrypted-password*	encryption-type means the encryption type of the password. Currently, products only support two encryption modes: 0 and 7. The number 0 means the password is not encrypted and the plaintext of password is directly entered. It is the same as the way of directly entering the password. The number 7 means the password is encrypted through an algorithm. You need to enter the encryption text for the encrypted password. The encryption text can be copied from the configuration files of other OLT.

Default Value

None

Command Mode

Line configuration mode

Usage Guidelines

For password encryption, refer to the explanation of the commands service **password-encryption** and **enable password**.

Example

The following example shows how to set the login password of VTY1 to test.

```
switch_conf#line vty 1
switch_conf_line#password test
```

2.3.15 show debug

Syntax

To display all debugging information of the current VTY, run the following command:

show debug

Parameters

None

Default Value

None

Command Mode

Other modes except the user mode

Example

```
Switch# show debug
http authentication debug is on
http cli debug is on
http request debug is on
http response debug is on
http session debug is on
http erro debug is on
http file debug is on
TELNET:
Incoming Telnet debugging is on
```

2.3.16 show line

Syntax

To display the status of the current effective line, run the following command:
show line [{console | vty} number]

Parameters

The definition of other parameters conforms to that of the line command.

Command Mode

Others modes except the user mode

Usage Guidelines

All effective line statuses will be shown if there is no parameter.

2.3.17 terminal length

Syntax

To change the line number on the current terminal screen, run the following command. The parameter can be obtained by the remote host. The rlogin protocol uses the parameter to notify the remote UNIX host. Run the no terminal length command to resume the default value:
terminal length *length*

no terminal length

Parameters

Parameters	Description
length	Line number displayed on each screen Value range: 0-512

Default Value

Pause when 24 lines are displayed on the screen.

Command Mode

Global configuration mode, privileged mode

Usage Guidelines

This command only takes effect on the current terminal. When a session is terminated, the attributes of this terminal are also gone.

Example

The following example shows how to set the line number displayed on the terminal to 40:

switch#terminal length 40

Related Command

line

2.3.18 terminal monitor

Syntax

To display the output debug and the system error information, run the following command. To

shutdown the monitor, use the no form of this command.

terminal monitor

no terminal monitor

Parameters

None

Default Value

The system's console port is enabled by default, while other terminals are disabled by default.

Command Mode

Global configuration mode, privileged mode

Usage Guidelines

This command only takes effect on the current terminal. When a session is terminated, the attributes of this terminal are also gone.

Example

The following example shows the information of debug output and system error:

switch#terminal monitor

Related Command

line

debug

2.3.19 terminal width

Syntax

To set the character number in each line, run the following command. To return to the default setting, use the no form of this command.

terminal width *number*

no terminal width

Parameters

Parameters	Description
number	Character number of each line. The value ranges from 0 to 256.

Default Value

80 characters in each line

Command Mode

Global configuration mode, privileged mode

Usage Guidelines

This command only takes effect on the current terminal. When a session is terminated, the attributes of this terminal are also gone.

Example

The following example shows how to set the character number in each line to 40.

```
switch#terminal width 40
```

Related Command

line

2.3.20 terminal-type

Syntax

To set the terminal type, run the following command. To return to the default setting, use the no form of this command.

terminal-type name

[**no**] **terminal-type** [*name*]

Parameters

Parameters	Description
name	Terminal name Terminal types currently supported are VT100, ANSI andVT100J.

Default Value

ANSI

Command Mode

Line configuration mode

Usage Guidelines

None

Example

The following example shows how to set the terminal type to VT100:

```
switch_conf# line vty 1
switch# terminal-type VT100
```

Chapter 3 Maintenance and Debugging Tool Commands

3.1 Network Testing Tool Commands

3.1.1 ping

Syntax

To test host accessibility and network connectivity, run the following command. After the ping command is run, an ICMP request message is sent to the destination host, and then the destination host returns an ICMP response message.

ping [-a | -d | -f | -i source-ip-address | -j host1 [host2 host3 …] | －k host1 [host2, host3 …] | -l length | -m interface | -n number | -r hops | -s tos | -t ttl | v | -w waittime | －b interval | -c]* host

Parameters

Parameters	Description
-a	Sets ping all along until it is been interrupted. Default value: no setting.
-d	Sets not apply the routing table. Default value: no setting.
-f	Sets the DF digit (message is not segmented). If the message required to be sent is larger than the MTU of the path, the message will be dropped by the routing switch on the path and the routing switch will then return an ICMP error message to the source host. If network performance has problems, one node in the network may be configured to a small MTU. You can use the –f option to decide the smallest MTU on the path. Default value: No resetting
-i	Sets the source IP address of the message or the IP address of an interface. Default value: Main IP address of the message-sending interface
source-ip-address	Source IP address adopted by the message
source-interface	Message takes the IP address of the source-interface interface as the source address.

-j *host1* [*host2 host3…*]	Sets the relaxation source route. Default: Not set
-k *host1* [*host2 host3…*]	Sets the strict source route Default: Not set
-l *length*	Sets the length of ICMP data in the message. Default: 56 bytes
-m interface	Sets the port of forwarding packets. Default value: auto-identification
-n *number*	Sets the total number of messages. Default: 5 messages
-r *hops*	Records routes. Up to hops routes are recorded. Default: not record
-s *tos*	Sets IP TOS of the message to tos. Default: 0
-t *ttl*	Sets IP TTL of the message to ttl. Default: 255
-**v**	Detailed output. Default value: simple output.
-w *waittime*	Time for each message to wait for response Default: 2 seconds
-b *interval*	Sets the time interval of sending ping packet. Unit: 10ms; Value range: 0-65535; Default Value: 0.
-c	Simple output
host	Destination host name or address

Command Mode

None

Command Mode

Privileged mode and global configuration mode

Usage Guidelines

The command supports that the destination address is the broadcast address or the multicast address. If the destination address is the broadcast address (255.255.255.255) or the multicast address, the ICMP request message is sent on all interfaces that support broadcast or multicast. The routing switch is to export the addresses of all response hosts. By pinging multicast address224.0.0.1, you can obtain the information about all hosts in directly-connected network segment that support multicast transmission.
Press the Q key to stop the ping command.

Simple output is adopted by default.

Parameters	Description
!	A response message is received.
.	Response message is not received in the timeout time.
U	The message that the ICMP destination cannot be reached is received.
Q	The ICMP source control message is received.
R	The ICMP redirection message is received.
T	The ICMP timeout message is received.
P	The ICMP parameter problem message is received.

The statistics information is exported:

Parameters	Description
packets transmitted	Number of transmitted messages
packets received	Number of received response messages, excluding other ICMPmessages
packet loss	Rate of messages that are not responded to
round-trip min/avg/max	Minimum/average/maximum time of a round trip (ms)

Example

```
switch#ping -l 10000 -n 30 192.168.20.125
PING 192.168.20.125 (192.168.20.125): 10000 data bytes
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
--- 192.168.20.125 ping statistics ---
30 packets transmitted, 30 packets received, 0% packet loss
round-trip min/avg/max = 50/64/110 ms
```

3.1.2 traceroute

Syntax

To detect which routes have already reached the destination, run the following command.
You can transmit to the destination the UDP packets (or ICMP ECHO packets) of different TTLs to confirm which routes have come to the destination. Each router on this path has to deduct 1 from the TTL value before forwarding ICMP ECHO packets. Speaking from this aspect, TTL is an effective hop count. When the TTL value of a packet is deducted to zero, the router sends back to the source system the ICMP timeout message. Send the first response

packet whose TTL is 1 and send TTL plus 1 subsequently until the target reaches to the max TTL.

By checking the ICMP timetout message sent back by inter medial routers, you can confirm the routers. At the arrival of the destination, the traceroute sends a UPD packet whose port ID is larger than 30000; the destination node hence can only transmit back a Port Unreachable ICMP message. This reception of this message means the arrival of destination.

traceroute [-i source-ip-address | -m source-interface | -j host1 [host2 host3 …] | –k host1 [host2, host3 …] | -p port-number | -q probe-count | -r hops | -t ttl | -w waittime | -x icmp]* host

Parameters

Parameters	Description
-i *source-ip-address*	Sets the source IP address of packet.
-m *source-interface*	Sets the packet-transmitted port.
-j *host1* [*host2 host3…*]	Sets the relaxation source route. Default: Not set
-k *host1* [*host2 host3…*]	Sets the strict source route Default: Not set
-p *port-number*	Sets the ID of destination port that transmits UDP packets. Default value: 33434 Default: 33434
-q *probe-count*	Sets the number of packets that you detect each time. Default: 3 messages
-r *hops*	Records routes. Up to hops routes are recorded. Default: not record
-t *ttl*	Sets IP TTL of the message to ttl. Default: the minimum and maximum TTLs are 1 and 30 respectively.
-w *waittime*	Time for each message to wait for response Default: 3 seconds
-x icmp	Sets the detection packet to be the ICMP ECHO packet. Default: UDP packet
host	Destination host

Default Value

None

Command Mode

Privileged mode and global configuration mode

Usage Guidelines

The UDP packet is used for detection by default, but you can run –x icmp to replace it with ICMP ECHO for detection.
If you want to stop traceroute, press q or Q. By default, the simple output information is as follows.
Simple output is adopted by default.

Parameters	Description
!N	Receives an ICMP-route unreachable packet.
!H	Receives an ICMP-host unreachable packet.
!P	Receives an ICMP-protocol unreachable packet.
!F	Receives an ICMP unreachable (need to be fragmented) packet.
!S	Receive an ICMP unreachable (failing to detect the source-station route) packet.

The statistics information is exported:

Parameters	Description
hops max	Means the maximum detection hops (the threshold of ICMP).
byte packets	Stands for the size of each detection packet.

Example

```
switch#traceroute 90.1.1.10
traceroute to 90.1.1.10 (90.1.1.10), 30 hops max, 36 byte packets
 1   90.2.2.1   0 ms   0 ms   0 ms
    2   90.1.1.10   0 ms   0 ms   0 ms
```

3.2 Fault Diagnosis Commands

The chapter describes the commands used for fault diagnosis. All the following commands are used to detect the reason of the fault. You can use other commands to remove the fault, such as the debug command.
The chapter only introduces the universal diagnosis commands. For more details, please refer to the Fault Diagnosis White Paper.
The fault diagnosis commands include:

- logging

- logging buffered
- logging console
- logging facility
- logging monitor
- logging on
- logging trap
- logging command
- service timestamps
- clear logging
- show break
- show debug
- show logging
- show file_syn

3.2.1 logging

Syntax

To display the state of logging (syslog), run the following command.To return to the default setting, use the no form of this command.

logging A.B.C.D [level]

no logging A.B.C.D [level]

Parameters

Parameters	Description
A.B.C.D	IP address of the syslog server
level	Level of log information on the server Refer to table 1.

Default value

The log information is not recorded to the server.

Command Mode

Global configuration mode

Usage Guidelines

The command can be used to record the log information to the designated syslog server. The command can be used for many times to designate multiple syslog servers.

Example

```
Switch_config# logging 192.168.1.1 errors
```

Related Command

logging trap

3.2.2 logging buffered

Syntax

To record the log information to the memory of the switch, run the following command.
logging buffered {size | level }

no logging buffered [size | level]

Parameters

Parameters	Description
size	Size of memory cache Value range: 4096-2147483647 Unit: byte
level	Information level of the log recorded to memory cache Refer to table 1.

Default Value

The information is not recorded to the memory cache.

Command Mode

Global configuration mode

Usage Guidelines

The command records the log information to the memory cache of the switch. The memory cache is circularly used. After the memory cache is fully occupied, the latter information will cover the previous information.
You can use the show logging command to display the log information recorded in the memory cache of the switch.
Do not use big memory for it causes the shortage of memory.

Table 1 Level of log recording

Prompt	Level	Description	Syslog Definition
emergencies	0	System unusable	LOG_EMERG

alerts	1	Immediate action needed	LOG_ALERT
critical	2	Critical conditions	LOG_CRIT
errors	3	Error conditions	LOG_ERR
warnings	4	Warning conditions	LOG_WARNING
notifications	5	Normal but significant condition	LOG_NOTICE
informational	6	Informational messages only	LOG_INFO
debugging	7	Debugging messages	LOG_DEBUG

Example

```
Switch_config# logging buffered    errors
```

Related Command

clear logging
show logging

3.3.3 logging console

Syntax

To control the information volume displayed on the console, run the following command.
To forbid the log information to be displayed on the console, use the no form of this command.
logging console *level*
no logging console [level]

Parameters

Parameters	Description
level	Information level of the logs displayed on the console Refer to table 2.

Default Value

The log level displayed on the console port is debugging by default.

Command Mode

Global configuration mode

Usage Guidelines

After the information level is specified, information of this level or the lower level will be displayed on the console.
Run the command show logging to display the currently configured level and the statistics information recorded in the log.

Table 2 Level of log recording

Prompt	Level	Description	Description
emergencies	0	System unusable	LOG_EMERG
alerts	1	Immediate action needed	LOG_ALERT
critical	2	Critical conditions	LOG_CRIT
errors	3	Error conditions	LOG_ERR
warnings	4	Warning conditions	LOG_WARNING
notifications	5	Normal but significant condition	LOG_NOTICE
informational	6	Informational messages only	LOG_INFO
debugging	7	Debugging messages	LOG_DEBUG

Example

Switch_config# logging console alerts

Related Command

logging facility

show logging

3.3.4 logging facility

Syntax

To record specified error information, run the following command. To restore to local7, use the

no form of this command.
logging facility *facility-type*
no logging facility

Parameters

Parameters	Description
facility-type	Facility type Refer to table 3.

Default Value

local7

Command Mode

Global configuration mode

Usage Guidelines

Table 3 Facility type

Type	Description
auth	Authorization system
cron	Cron facility
daemon	System daemon
kern	Kernel
local0-7	Reserved for locally defined messages
lpr	Line printer system
mail	Mail system
news	USENET news
sys9	System use
sys10	System use
sys11	System use
sys12	System use
sys13	System use
sys14	System use
syslog	System log
user	User process

uucp	UNIX-to-UNIX copy system

Example

The following example shows how to set the recorded information to kernel:

Switch_config# logging facility kern

Related Command

logging console

3.3.5 logging monitor

Syntax

To control the information volume displayed on the terminal line, run the following command. To forbid the log information to be displayed on the terminal line, use the no form of this command.

logging monitor *level*

no logging monitor [level]

Parameters

Parameters	Description
level	Information level of the logs displayed on the terminal line Refer to table 4.

Default Value

debugging

Command Mode

Global configuration mode

Usage Guidelines

Table 4 Level of log recording

Prompt	Level	Description	Description
emergencies	0	System is unusable	LOG_EMERG
alerts	1	Immediate action needed	LOG_ALERT

critical	2	Critical conditions	LOG_CRIT
errors	3	Error conditions	LOG_ERR
warnings	4	Warning conditions	LOG_WARNING
notifications	5	Normal but significant condition	LOG_NOTICE
informational	6	Informational messages only	LOG_INFO
debugging	7	Debugging messages	LOG_DEBUG

Example

The following example shows how to control the information volume displayed on the terminal line as the error information:

Switch_config# logging monitor errors

Related Command

terminal monitor

3.3.6 logging on

Syntax

To control the recording of error information, run the following command.
To forbid all records, use the no form of this command.
logging on
no logging on

Parameters

None

Default Value

logging on

Command Mode

Global configuration mode

Example

switch_config# logging on

```
switch_config# ^Z
Configured from console 0 by DEFAULT
switch# ping 192.167.1.1

switch#ping 192.167.1.1
PING 192.167.1.1 (192.167.1.1): 56 data bytes
!!!!!
--- 192.167.1.1 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 0/4/10 ms
P: s=192.167.1.111 (local), d=192.167.1.1 (GigaEthernet1/1), g=192.167.1.1, len=84, sending
IP: s=192.167.1.1 (GigaEthernet1/1), d=192.167.1.111 (GigaEthernet1/1), len=84,rcvd
IP: s=192.167.1.111 (local), d=192.167.1.1 (GigaEthernet1/1), g=192.167.1.1, len=84, sending
IP: s=192.167.1.1 (GigaEthernet1/1), d=192.167.1.111 (GigaEthernet1/1), len=84,rcvd
IP: s=192.167.1.111 (local), d=192.167.1.1 (GigaEthernet1/1), g=192.167.1.1, len=84, sending
IP: s=192.167.1.1 (GigaEthernet1/1), d=192.167.1.111 (GigaEthernet1/1), len=84,rcvd
IP: s=192.167.1.111 (local), d=192.167.1.1 (GigaEthernet1/1), g=192.167.1.1, len=84, sending
IP: s=192.167.1.1 (GigaEthernet1/1), d=192.167.1.111 (GigaEthernet1/1), len=84,rcvd
IP: s=192.167.1.111 (local), d=192.167.1.1 (GigaEthernet1/1), g=192.167.1.1, len=84, sending
IP: s=192.167.1.1 (GigaEthernet1/1), d=192.167.1.111 (GigaEthernet1/1), len=84,rcvd

switch_config# no logging on

switch_config# ^Z
switch#
switch# ping 192.167.1.1
PING 192.167.1.1 (192.167.1.1): 56 data bytes
!!!!!
--- 192.167.1.1 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 0/4/10 ms
```

Related Command

logging
logging buffered
logging monitor
logging console

3.3.7 logging trap

Syntax

To control the information volume recorded to the syslog server, run the following command. To forbid the information to be recorded to the syslog server, use the no form of this command.
logging trap *level*
no logging trap [level]

Parameters

Parameters	Description
level	Information level of the logs displayed on the terminal line Refer to table 5.

Default Value

Informational

Command Mode

Global configuration mode

Usage Guidelines

Table 5 Level of log recording

Prompt	Level	Description	Description
emergencies	0	System is unusable	LOG_EMERG
alerts	1	Immediate action needed	LOG_ALERT
critical	2	Critical conditions	LOG_CRIT
errors	3	Error conditions	LOG_ERR
warnings	4	Warning conditions	LOG_WARNING
notifications	5	Normal but significant condition	LOG_NOTICE
informational	6	Informational messages only	LOG_INFO
debugging	7	Debugging	LOG_DEBUG

		messages	

Example

Switch_config# logging 192.168.1.1
Switch_config# logging trap notifications

Related Command

logging

3.3.8 logging command

Syntax

To enable the command execution recording, run logging command. After this function is enabled will be generated for each of all entered commands, in which the line to execute this command, the command line, the execution result, the login line and the login address will be recorded.
logging command [hide]
To disable this function, use the no form of this command.
no logging command

Parameters

Parameter	Parameter Description
hide	hide mode

Default Value

no logging command

Command Mode

Global configuration mode

Example

Switch_config#logging command
Switch_config#Jul 11 15:26:56 %CMD-6-EXECUTE: `logging command ` return 0, switch(vty 0, 192.168.25.42).

Related Command

logging

3.3.9 logging source-interface

Syntax

To set the source port of log exchange, run the following command.
To disable this function, use the no form of this command.
logging source-interface interface
no logging source-interface

Parameters

Parameter	Parameter Description
interface	**Source address port**

Default Value

no logging source-interface

Command Mode

Global configuration mode

Example

Switch_config# logging source-interface vlan 1

Related Command

logging

3.3.10 logging history alerts

Syntax

To set the level of the historical log table to alerts (need to act immediately), run the following command.
[no] logging history alerts

Parameters

None

Default Value

logging history warnings

Command Mode

Global configuration mode

Example

Switch_config#logging history alerts

Related Command

logging

3.3.11 logging history critical

Syntax

To set the level of the historical log table to critical, run the following command.
logging history critical
[no] logging history critical

Parameters

None

Default Value

logging history warnings

Command Mode

Global configuration mode

Example

Switch_config#logging history critical

Related Command

logging

3.3.12 logging history debugging

Syntax

To set the level of the historical log table to debugging, run the following command.

[no] logging history debugging

Parameters

None

Default Value

logging history warnings

Command Mode

Global configuration mode

Example

Switch_config#logging history debugging

Related Command

logging

3.3.13 logging history emergencies

Syntax

To set the level of the historical log table to emergencies, run the following command:
logging history emergencies
[no] logging history emergencies

Parameters

None

Default Value

logging history warnings

Command Mode

Global configuration mode

Example

Switch_config#logging history emergencies

Related Command

logging

3.3.14 logging history errors

Syntax

To set the level of the historical log table to errors, run the following command:
[no] logging history errors

Parameters

None

Default Value

logging history warnings

Command Mode

Global configuration mode

Example

Switch_config#logging history errors

Related Command

logging

3.3.15 logging history informational

Syntax

To set the level of the historical log table to informational, run the following command:
[no] logging history informational

Parameters

None

Default Value

logging history warnings

Command Mode

Global configuration mode

Example

Switch_config#logging history informational

Related Command

logging

3.3.16 logging history notifications

Syntax

To set the level of the historical log table to notifications, run the following command:

[no] logging history notificaitons

Parameters

None

Default Value

logging history warnings

Command Mode

Global configuration mode

Example

Switch_config#logging history notifications

Related Command

logging

3.3.17 logging history warnings

Syntax

To set the level of the historical log table to warnings, run the following command:
[no] logging history warnings

Parameters

None

Default Value

logging history warnings

Command Mode

Global configuration mode

Example

Switch_config#logging history warnings

Related Command

logging

3.3.18 logging history rate-limit

Syntax

To set the log output rate, run the following command.
logging history rate-limit rate
To return to the default setting, use the no form of this command.
no logging history rate-limit

Parameters

Parameters	Description
rate	Stands for the number of logs which are exported each second. The value ranges from 1 to 512.

Default Value

logging history rate-limit 0

Command Mode

Global configuration mode

Example

Switch_config#logging history rate-limit 256

Related Command

logging

3.3.19 logging history size

Syntax

To set the number of entries in the historical log table, run the following command.
logging history size *size*

Parameters

Parameters	Description
size	Stands for the number of historical log entries. The value ranges from 1 to 500.

Default Value

logging history size 0

Command Mode

Global configuration mode

Example

Switch_config#logging history size 256

Related Command

logging

3.3.20 service timestamps

Syntax

To set configure the time stamp that is added when the system is debugged or records the log information, run the following command.
To cancel the time stamp that is added when the system is debugged or records the log information, use the no form of this command.
service timestamps {log|debug} {uptime| datetime}]
no service timestamps {log|debug}

Parameters

Parameters	Description
log	Adds the time stamp before the log information.
debug	Adds the time stamp before the debug information.
uptime	Duration between the startup of the switch and the current time
datetime	Real-time clock time

Default Value

service timestamps log date
service timestamps debug date

Command Mode

Global configuration mode

Usage Guidelines

The time stamp in the uptime form is displayed like HHHH:MM:SS, meaning the duration from the start-up of the switch to the current time.

The time stamp in the date form is displayed like YEAR-MON-DAY HH:MM:SS, meaning the real-time clock time.

Example

Switch_config# service timestamps debug uptime

3.3.21 clear logging

Syntax

To clear the log information recorded in the memory cache, run the following command.
clear logging

Parameters

None

Default Value

None

Command Mode

Privileged mode

Related Command

logging buffered

show logging

Example

Switch_config# service timestamps debug uptime

3.3.22 show break

Syntax

To display the information about abnormal breakdown of the switch, run the following command.
show break

Parameters

None

Default Value

None

Command Mode

Other modes except the user mode

Usage Guidelines

The command can be used to display the information about abnormal breakdown of the switch, helping to find the cause of the abnormality.

Example

```
Switch#show break
==========================================================
BreakNum: 1
Exception Type:300-Data Access Interrupt
date: 2014-4-14    time: 15:31:2
R0    = 00000004     R1    = 07f54e88     R2    = 00000000     R3    = 00000004
R4    = 00000000     R5    = 00000010     R6    = 0000000f     R7    = 0fffffff
R8    = 00000001     R9    = 00000000     R10 = 00552a34     R11 = 014d23f0
R12 = 24002048     R13 = 00000000     R14 = 01d7fbbc     R15 = 00000000
R16 = 00000000     R17 = 00000000     R18 = 00000000     R19 = 00000001
R20 = 0000000e     R21 = 01a491a0     R22 = 00000002     R23 = 00000000
R24 = 00000000     R25 = 00000000     R26 = 07f5565c     R27 = 00000000
R28 = 00000000     R29 = 00000002     R30 = 07f5565c     R31 = 00000011
MSR = 00029210     LR    = 00552a04     CTR = 00552a34     IP    = 00552a38
dear = 00000000     bear = 00000000     besr = 00000000
call procedure--
0x005529f8--
0x00597388--
0x005528c4--
0x005960cc--
0x0059506c--
0x0088d9cc--
0x0088ef30--
0x00862fe0--
0x011ee6ec--
0x00000000--
```

The whole displayed content can be divided into six parts:

1. RROR:file function.map not found

The prompt information means that the system has not been installed the software function.map, which does not affect the system running.

If the version of the software function.map is not consistent with that of the switch, the system prompts that the version is not consistent.

2. Exception Type—Abnormal hex code plus abnormal name

3. BreakNum

It is the current abnormal number. It means the number of abnormalities that the system has since it is powered on in the latest time. It is followed by the time when the abnormality occurs.

4. Content of the register
The common content of the register is listed out.
5. Variable area
The content in the stack is listed out.
6. Calling relationship of the number
If the map file is not installed on the system, only the function's address is displayed. If the map file is installed on the system, the corresponding function name, .o file name and .a file name are displayed.
The calling relationship is from bottom to top.

3.3.23 show debug

Syntax

To display all the enabled debugging options of the switch, run the following command.
show debug

Parameters

None

Command Mode

Other modes except the user mode

Example

switch# show debug

Crypto Subsystem:
  Crypto Ipsec debugging is on
  Crypto Isakmp debugging is on
  Crypto Packet debugging is on

Related Command

debug

3.3.24 show logging

Syntax

To display the state of logging (syslog), run the following command.
show logging

Parameters

None

Command Mode

Other modes except the user mode

Usage Guidelines

The command can be used to display the state of logging (syslog), including the login information about the console, monitor and syslog.

Example

```
switch# show logging

Syslog logging: enabled (0 messages dropped, 0 flushes, 0 overruns)
    Console logging: level debugging, 66 messages logged
    Monitor logging: level debugging, 0 messages logged
    Buffer logging: disabled
    Trap logging: level informational, 0 message lines logged
```

Related Command

clear logging

Chapter 4 SSH Configuration Commands

4.1 ip sshd enable

Syntax

ip sshd enable
no ip sshd enable

Parameters

None

Default Value

Disabled

Usage Guidelines

The command can be used to generate the rsa encryption key and then monitor the connection to the ssh server. The process of generating encryption key is a process of consuming the calculation time. It takes one or two minutes.

Command Mode

Global configuration mode

Example

In the following example, the SSH service is generated.

switch_config#ip sshd enable

4.2 ip sshd timeout

Syntax

To set the timeout for the link without passing the authentication, run the following command:
ip sshd timeout *time-length*
To return to the default setting, use the no form of this command.
no ip sshd timeout

Parameters

Parameters	Description
time-length	Maximum time from the establishment of connection to the authentication approval;Value range: 60-65535

Default Value

180 seconds

Usage Guidelines

To prevent the illegal user from occupying the connection resources, the connections that are not approved will be shut down after the set duration is exceeded.

Command Mode

Global configuration mode

Example

In the following example, the timeout time is set to 360 seconds

Switch_config#ip sshd timeout 360

4.3 ip sshd auth-method

Syntax

To set ssh authentication method list, run the following command.

To return to the default setting, use the no form of this command.

ip sshd auth-method *method*

no ip sshd auth-method

Parameters

Parameters	Description
method	Sets authentication method list. The length of the authentication method's name is no more than 20 characters.

Default Value

The default authentication method list is used.

Usage Guidelines

The ssh server uses the authentication method list of the login type.

Command Mode

Global configuration mode

Example

In the following example, an auth-ssh authentication method list is configured and it is applied

to the ssh server:

```
Switch_config#aaa authentication login auth-ssh local
Switch_config#ip sshd auth-method auth-ssh
```

4.4 ip sshd access-class

Syntax

To set access control list for ssh server, run the following command:

ip sshd access-class *access-list*

To return to the default setting, use the no form of this command.

no ip sshd access-class

Parameters

Parameters	Description
access-list	Standard IP access list The length of the access list's name is no more than 20 characters.

Default Value

No access control list

Usage Guidelines

The command can be used to configure the access control list for the ssh server. Only the connections complying with the regulations in the access control list can be approved.

Command Mode

Global configuration mode

Example

In the following example, an ssh-accesslist access control list is configured and applied in the ssh server:

```
Switch_config# ip access-list standard ssh-accesslist
Switch_config_std_nacl# deny 192.168.20.40
Switch_config#ip sshd access-class ssh-accesslist
```

4.5 ip sshd auth-retries

Syntax

To set the retry times for authentication when the user fails, run the following command:

ip sshd auth-retries *times*

To return to the default setting, use the no form of this command.

no ip sshd auth-retries

Parameters

Parameters	Description
times	Maximum re-authentication times; Value range: 0-65535

Default Value

6 times

Usage Guidelines

The connection will be shut down when the re-authentication times exceeds the set times.

Command Mode

Global configuration mode

Example

In the following example, the maximum re-authentication times is set to five times:

Switch_config#ip sshd auth-retries 5

4.6 ip sshd clear

Syntax

To remove the ssh connection with a specified ID compulsorily, run the following command:

ip sshd clear *ID*

Parameters

Parameters	Description
ID	Number of the SSH connection to the local device; Value range: 0-15

Default Value

None

Command Mode

Global configuration mode

Usage Guidelines

The command can be used to disable the incoming ssh connection with the specified number compulsorily. You can run the command **show ssh** to check the current incoming connection's number.

Example

In the following example, the No.0 incoming connection is mandatorily closed:

Switch_config#ip sshd clear 0

4.7 ip sshd silence-period

Syntax

To set the silence period of SSH login, run the following command:
ip sshd silence-period *time-length*
To return to the default setting, use the no form of this command:
no ip sshd silence-period

Parameters

Parameters	Description
time-length	Means the time of the silence, which ranges from 0 to 3600.

Default Value

60s

Usage Guidelines

The command can be used to set the login silence period. After the accumulated login failures exceed a certain threshold, the system regards that there exist attacks and disables the SSH service in a period of time, that is, the system enters the login silence period.
The silence period is set by the ip sshd silence-period command. The default silence period is 60 seconds. The allowable login failures are set by the ip sshd auth-retries command, whose default value is 6.

Command Mode

Global configuration mode

Example

The following example shows how to set the silence period to 200 seconds.

switch_config#ip sshd silence-period 200

4.9 ip sshd save

Syntax

To save the initial password, run the following command.
ip sshd save
To return to the default setting, use the no form of this command.

no ip sshd save

Parameters

None

Default Value

None

Command Mode

Global configuration mode

Usage Guidelines

The command can be used to save the initial key. When the SSH server is restarted, the key will be first read from the flash; if the key reading is successful, the recalculation of key will be avoided and the startup time will be shortened.

Example

The following example shows how to enable the key protection function.

switch_config#ip sshd save

4.10 ip sshd disable-aes

Syntax

To forbid aes algorithm during the process of encryption algorithm negotiation, run the following command.

ip sshd disable-aes

To return to the default setting, use the no form of this command.

no ip sshd disable-aes

Parameters

None

Default Value

The AES encryption algorithm is forbidden.

Usage Guidelines

The command can be used to decide whether to use the AES algorithm during the encryption algorithm negotiation. The AES algorithms such as aes128-cbc and aes256-cbc are not used by default.

Command Mode

Global configuration mode

Example

The following example shows how to disable the AES encryption algorithm.

switch_config#ip sshd disable-aes

4.11 ssh

Syntax

To set connection with the remote ssh server, run the following command:

ssh –l *userid* **–d** *destIP* **[-c {des|3des|blowfish }] [-o** *numberofpasswdprompts***] [-p** *port***] [-v** {1|2}**]**

Parameters

Parameters	Description
–l userid	User account on the server
–d destIP	Destination IP address in the dotted decimal system
-o numberofpasswdprompts	Re-authentication times after the first authentication fails; Actual re-authentication times is the set value plus the smallest value set on the server. Its default value is three times. Value range: 0-65535
-p port	Port number that the server monitorsIts default value is 22. Value range: 0-65535
-c {des|3des|blowfish}	Encryption algorithm used during communicationThe encryption algorithm is 3des by default.
-v version	Specified version number

Default Value

N/A

Command Mode

Privileged mode, user mode and global configuration mode

Usage Guidelines

The command can be used to create a connection with the remote ssh server.

Example

The following example shows how a connection with the ssh server whose IP address is 192.168.20.41 is created. The account is zmz and the encryption algorithm is blowfish:

device# ssh –l zmz –d 192.168.20.41 –c blowfish

4.12 show ssh

Syntax

To show session on ssh server of the device, run the following command:

show ssh

Parameters

None

Default Value

None

Usage Guidelines

The command can be used to display the sessions on the ssh server.

Command Mode

Other modes except the user mode

Example

The following example shows the sessions on the ssh server:

Switch#show ssh

4.13 show ip sshd

Syntax

To show the current status of ssh server, run the following command:

show ip sshd

Parameters

None

Default Value

None

Usage Guidelines

The command can be used to display the current state of the ssh server.

Command Mode

Other modes except the user mode

Example

In the following example, the current state of the ssh server is displayed:

```
device# show ip sshd
```